

Title (en)

ELECTROCHEMICAL DEVICE USING SOLID POLYMER ELECTROLYTE USING FINE POLYMER COMPOSITE PARTICLES

Title (de)

ELEKTROCHEMISCHE VORRICHTUNG MIT EINEM FESTPOLYMERELEKTROLYT MIT FEINPOLYMERBUNDPARTIKELN

Title (fr)

DISPOSITIF ÉLECTROCHIMIQUE UTILISANT UN ÉLECTROLYTE POLYMÈRE SOLIDE UTILISANT DE FINES PARTICULES COMPOSITES À BASE DE POLYMÈRES

Publication

**EP 2493001 A4 20180404 (EN)**

Application

**EP 10824962 A 20101020**

Priority

- JP 2009242879 A 20091021
- JP 2010129364 A 20100604
- JP 2010068454 W 20101020

Abstract (en)

[origin: EP2493001A1] Disclosed is an electrochemical device comprising: a negative electrode having a negative electrode material layer at least on a surface; a positive electrode having a positive electrode material layer at least on a surface; and a solid electrolyte disposed between the negative electrode and the positive electrode, wherein: (1) the solid electrolyte is a solid polymer electrolyte that contains, as a main component, fine composite particles each comprising a polymer brush layer composed of polymer graft chains obtained by polymerization of a monomer having a polymerizable functional group; the fine composite particles form a substantially three-dimensional ordered array structure; and a continuous ion-conductive network channel is formed in each gap of the fine particles, (2) the negative electrode or the negative electrode material layer and/or the positive electrode or the positive electrode material layer have gaps filled with the fine composite particles, and (3) a contact interface between the solid electrolyte and the electrode material layer or the electrode is a polymer brush layer composed of polymer graft chains (the electrode material layer is at least one layer selected from the group consisting of the negative electrode material layer and the positive electrode active material layer, and the electrode is at least one electrode selected from the group consisting of the negative electrode and the positive electrode).

IPC 8 full level

**H01M 10/056** (2010.01); **C08F 20/34** (2006.01); **H01G 9/022** (2006.01); **H01G 11/24** (2013.01); **H01G 11/56** (2013.01); **H01M 2/16** (2006.01); **H01M 4/13** (2010.01); **H01M 4/62** (2006.01); **H01M 8/02** (2016.01); **H01M 8/10** (2016.01); **H01M 8/1069** (2016.01); **H01M 10/052** (2010.01); **H01M 10/0565** (2010.01); **H01M 10/0585** (2010.01); **H01M 4/131** (2010.01); **H01M 4/136** (2010.01)

CPC (source: EP KR US)

**C08F 20/34** (2013.01 - KR); **H01G 11/06** (2013.01 - KR); **H01G 11/24** (2013.01 - EP KR US); **H01G 11/56** (2013.01 - EP KR US); **H01M 4/13** (2013.01 - EP KR US); **H01M 4/131** (2013.01 - KR); **H01M 4/136** (2013.01 - KR); **H01M 4/62** (2013.01 - KR); **H01M 8/02** (2013.01 - KR); **H01M 8/1069** (2013.01 - EP KR US); **H01M 10/056** (2013.01 - EP US); **H01M 10/0565** (2013.01 - EP KR US); **H01M 10/0585** (2013.01 - EP KR US); **H01M 50/46** (2021.01 - EP KR US); **H01G 11/06** (2013.01 - EP US); **H01M 4/131** (2013.01 - EP US); **H01M 4/136** (2013.01 - EP US); **H01M 2300/0094** (2013.01 - EP KR US); **Y02E 60/10** (2013.01 - EP KR); **Y02E 60/13** (2013.01 - KR US); **Y02E 60/50** (2013.01 - EP KR); **Y02P 70/50** (2015.11 - EP KR US)

Citation (search report)

- [Y] US 2002006552 A1 20020117 - ISHIDA AKIKO [JP], et al
- [Y] US 2005274000 A1 20051215 - OH BOOKEUN [US], et al
- See references of WO 2011049113A1

Cited by

EP3352272A3; CN111819709A; EP3675262A3; CN111384435A

Designated contracting state (EPC)

AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

DOCDB simple family (publication)

**EP 2493001 A1 20120829**; **EP 2493001 A4 20180404**; CN 102576902 A 20120711; CN 102576902 B 20150527; JP 5705123 B2 20150422; JP WO2011049113 A1 20130314; KR 20120098728 A 20120905; US 2012231346 A1 20120913; WO 2011049113 A1 20110428

DOCDB simple family (application)

**EP 10824962 A 20101020**; CN 201080047253 A 20101020; JP 2010068454 W 20101020; JP 2011537275 A 20101020; KR 20127013001 A 20101020; US 201013502663 A 20101020